

## The World Wide Web Beyond Publishing: An Application-Based Approach

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The growth of the World Wide Web (Web) in the past few years has been phenomenal. Web sites had a basic look and feel in the early development stages of the Internet. Using your favorite browser you could sift through pages of hypertext and images, gleaming information about almost any topic you might imagine. Today, the Web has moved in a new direction—on-line applications.

On-line applications allow users to access programs remotely over the network. Examples of on-line applications include corporate databases, groupware systems, etc. We have decided to use the Internet as our network infrastructure and Web technology as a client development environment.

Using on-line applications we are expanding the functionality of the Web. Our development team has begun porting all applications to the Web environment. We are currently working in three main areas of expansion - databases, multimedia, and artificial intelligence.

Ortho Trauma 95 (OT95) [1] is a relational *database* that is used to track over 200 data points on orthopaedic trauma patients. Porting OT95 will allow trauma centers world wide to perform multi-site outcome studies on-line. This will allow users to uncover the best surgical procedures, appropriate implants, and complications related to both implants and procedures.

The Long Bone Fracture Classification is designed to provide educational support for orthopaedic residents. This *multimedia* application presents the user with descriptive text as well as graphical representations of all the long bone fractures that are contained within the currently accepted coding system. Having this application on-line will provide the users with access to treatment options as well as pre and post operative x-ray films from selected fractures on demand.

INC2.5 [2], an *artificial intelligence* tool, is a machine learning classification system which functions as a tool for assisting physicians in the decision making process. INC2.5 obtains information from patient records and builds a

decision tree, subsequently used for predicting the outcome of new patients. Making INC2.5 available over the Web will allow users across multiple sites to both contribute and share data.

In addition we are utilizing the Web in a more traditional role as a publishing medium. Through Internet and secure intranet we have made available a wide array of information services reaching both the general public and employees.

For example, through an on-line guest book we collect information about the users of our Web site. Candidate residents and prospective employees can find out about employment opportunities through the employment services page. A medical glossary allows users to search for medical terms and definitions.

In order to accomplish all of the above we are using new technologies, including Shockwave, frames, CGI, etc. For example, Shockwave movies allow users to have multimedia applications run through their Web browser. Frames-capable browsers allow the developer to build an on-line application interface. CGI programming enable users to run applications on remote machines passing data from one network to another.

Realizing that technology is only good if the users finds it useful, we have decided to establish an evaluation task force including customers to test and evaluate both on-line applications and information services. In general, we hope to provide a content-rich service to the community through an electronic presence on the Web.

### Reference

[1]. "Orthopaedic Trauma Registry," Proceeding of the Eleventh International Symposium on the Creation of Electronic Health Record Systems and Global Conference on Patient Cards, Medical Records Institute, pp. 169-175, Orlando, Florida, March 14-19, 1995.

[2]. Hadzikadic, Mirsad; Bohren, Benjamin. "Learning to Predict: INC 2.5," *IEEE Transaction on Knowledge and Data Engineering*. In Press.